

## SEQUENCE LISTING

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<120> ANTI-IDIOTYPE ANTI-CEA ANTIBODY  
MOLECULES AND METHODS

<130> MER-132

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<160> 34

<170> FastSEQ for Windows Version 4.0

<210> 1  
<211> 117  
<212> PRT  
<213> Mus musculus

<400> 1  
Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys Pro Gly Ala  
1 5 10 15  
Ser Val Lys Ile Ser Cys Lys Thr Ser Gly His Thr Phe Thr Glu Tyr  
20 25 30  
Asn Met Gln Trp Val Lys Gln Ser Leu Gly Gln Ser Leu Glu Trp Ile  
35 40 45  
Gly Gly Ile Asn Pro Asn Asn Val Gly Ser Ile Tyr Asn Gln Lys Phe  
50 55 60  
Arg Gly Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser Thr Ala Tyr  
65 70 75 80  
Met Glu Leu Arg Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys  
85 90 95  
Ala Arg Gly Tyr Gly Asn Tyr Val Ala Tyr Trp Gly Gln Gly Thr Leu  
100 105 110  
Val Thr Val Ser Ala  
115

<210> 2  
<211> 107  
<212> PRT  
<213> Mus musculus

<400> 2  
Asp Ile Val Met Thr Gln Ser Gln Lys Phe Met Ser Thr Ser Val Gly  
1 5 10 15

Asp Arg Val Ser Val Thr Cys Lys Ala Ser Gln Asn Val Asn Thr Asn  
20 25 30  
Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro Lys Ser Leu Ile  
35 40 45  
Tyr Ser Ala Ser Tyr Arg Tyr Ser Gly Val Pro Asp Arg Phe Thr Gly  
50 55 60  
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Asn Val Gln Ser  
65 70 75 80  
Glu Asp Leu Ala Glu Phe Phe Cys Gln Gln Tyr Asn Arg Tyr Pro Phe  
85 90 95  
Thr Phe Gly Gly Thr Lys Leu Glu Leu Lys  
100 105

<210> 3  
<211> 645  
<212> PRT  
<213> Homo sapiens

<400> 3  
Lys Leu Thr Ile Glu Ser Thr Pro Phe Asn Val Ala Glu Gly Lys Glu  
1 5 10 15  
Val Leu Leu Leu Val His Asn Leu Pro Gln His Leu Phe Gly Tyr Ser  
20 25 30  
Trp Tyr Lys Gly Glu Arg Val Asp Gly Asn Arg Gln Ile Ile Gly Tyr  
35 40 45  
Val Ile Gly Thr Gln Gln Ala Thr Pro Gly Pro Ala Tyr Ser Gly Arg  
50 55 60  
Glu Ile Ile Tyr Pro Asn Ala Ser Leu Leu Ile Gln Asn Ile Ile Gln  
65 70 75 80  
Asn Asp Thr Gly Phe Tyr Thr Leu His Val Ile Lys Ser Asp Leu Val  
85 90 95  
Asn Glu Glu Ala Thr Gly Gln Phe Arg Val Tyr Pro Glu Leu Pro Lys  
100 105 110  
Pro Ser Ile Ser Ser Asn Asn Ser Lys Pro Val Glu Asp Lys Asp Ala  
115 120 125  
Val Ala Phe Thr Cys Glu Pro Glu Thr Gln Asp Ala Thr Tyr Leu Trp  
130 135 140  
Trp Val Asn Asn Gln Ser Leu Pro Val Ser Pro Arg Leu Gln Leu Ser  
145 150 155 160  
Asn Gly Asn Arg Thr Leu Thr Leu Phe Asn Val Thr Arg Asn Asp Thr  
165 170 175  
Ala Ser Tyr Lys Cys Glu Thr Gln Asn Pro Val Ser Ala Arg Arg Ser  
180 185 190  
Asp Ser Val Ile Leu Asn Val Leu Tyr Gly Pro Asp Ala Pro Thr Ile  
195 200 205  
Ser Pro Leu Asn Thr Ser Tyr Arg Ser Gly Glu Asn Leu Asn Leu Ser  
210 215 220  
Cys His Ala Ala Ser Asn Pro Pro Ala Gln Tyr Ser Trp Phe Val Asn  
225 230 235 240  
Gly Thr Phe Gln Gln Ser Thr Gln Glu Leu Phe Ile Pro Asn Ile Thr  
245 250 255  
Val Asn Asn Ser Gly Ser Tyr Thr Cys Gln Ala His Asn Ser Asp Thr

260	265	270
Gly Leu Asn Arg Thr Thr Val Thr	Thr Ile Thr Val Tyr Ala Glu Pro	
275	280	285
Pro Lys Pro Phe Ile Thr Ser Asn Asn Ser Asn Pro Val Glu Asp Glu		
290	295	300
Asp Ala Val Ala Leu Thr Cys Glu Pro Glu Ile Gln Asn Thr Thr Tyr		
305	310	315
320	325	330
Leu Trp Trp Val Asn Asn Gln Ser Leu Pro Val Ser Pro Arg Leu Gln		
335	340	345
Leu Ser Asn Asp Asn Arg Thr Leu Thr Leu Leu Ser Val Thr Arg Asn		
350	355	360
Asp Val Gly Pro Tyr Glu Cys Gly Ile Gln Asn Glu Leu Ser Val Asp		
365	370	375
His Ser Asp Pro Val Ile Leu Asn Val Leu Tyr Gly Pro Asp Asp Pro		
380	385	390
Thr Ile Ser Pro Ser Tyr Thr Tyr Tyr Arg Pro Gly Val Asn Leu Ser		
400	405	410
Leu Ser Cys His Ala Ala Ser Asn Pro Pro Ala Gln Tyr Ser Trp Leu		
415	420	425
Ile Asp Gly Asn Ile Gln Gln His Thr Gln Glu Leu Phe Ile Ser Asn		
430	435	440
Ile Thr Glu Lys Asn Ser Gly Leu Tyr Thr Cys Gln Ala Asn Asn Ser		
445	450	455
Ala Ser Gly His Ser Arg Thr Thr Val Lys Thr Ile Thr Val Ser Ala		
460	465	470
Glu Leu Pro Lys Pro Ser Ile Ser Ser Asn Asn Ser Lys Pro Val Glu		
480	485	490
Asp Lys Asp Ala Val Ala Phe Thr Cys Glu Pro Glu Ala Gln Asn Thr		
495	500	505
Thr Tyr Leu Trp Trp Val Asn Gly Gln Ser Leu Pro Val Ser Pro Arg		
510	515	520
Leu Gln Leu Ser Asn Gly Asn Arg Thr Leu Thr Leu Phe Asn Val Thr		
525	530	535
Arg Asn Asp Ala Arg Ala Tyr Val Cys Gly Ile Gln Asn Ser Val Ser		
540	545	550
Ala Asn Arg Ser Asp Pro Val Thr Leu Asp Val Leu Tyr Gly Pro Asp		
560	565	570
Thr Pro Ile Ile Ser Pro Pro Asp Ser Ser Tyr Leu Ser Gly Ala Asn		
575	580	585
Leu Asn Leu Ser Cys His Ser Ala Ser Asn Pro Ser Pro Gln Tyr Ser		
590	595	600
Trp Arg Ile Asn Gly Ile Pro Gln Gln His Thr Gln Val Leu Phe Ile		
605	610	615
Ala Lys Ile Thr Pro Asn Asn Asn Gly Thr Tyr Ala Cys Phe Val Ser		
620	625	630
Asn Leu Ala Thr Gly Arg Asn Asn Ser Ile Val Lys Ser Ile Thr Val		
640	645	635

<210> 4

<211> 347

<212> PRT

<213> Homo sapiens

<400> 4

Asp Cys Gly Leu Pro Pro Asp Val Pro Asn Ala Gln Pro Ala Leu Glu  
1 5 10 15  
Gly Arg Thr Ser Phe Pro Glu Asp Thr Val Ile Thr Tyr Lys Cys Glu  
20 25 30  
Glu Ser Phe Val Lys Ile Pro Gly Glu Lys Asp Ser Val Ile Cys Leu  
35 40 45  
Lys Gly Ser Gln Trp Ser Asp Ile Glu Glu Phe Cys Asn Arg Ser Cys  
50 55 60  
Glu Val Pro Thr Arg Leu Asn Ser Ala Ser Leu Lys Gln Pro Tyr Ile  
65 70 75 80  
Thr Gln Asn Tyr Phe Pro Val Gly Thr Val Val Glu Tyr Glu Cys Arg  
85 90 95  
Pro Gly Tyr Arg Arg Glu Pro Ser Leu Ser Pro Lys Leu Thr Cys Leu  
100 105 110  
Gln Asn Leu Lys Trp Ser Thr Ala Val Glu Phe Cys Lys Lys Lys Ser  
115 120 125  
Cys Pro Asn Pro Gly Glu Ile Arg Asn Gly Gln Ile Asp Val Pro Gly  
130 135 140  
Gly Ile Leu Phe Gly Ala Thr Ile Ser Phe Ser Cys Asn Thr Gly Tyr  
145 150 155 160  
Lys Leu Phe Gly Ser Thr Ser Ser Phe Cys Leu Ile Ser Gly Ser Ser  
165 170 175  
Val Gln Trp Ser Asp Pro Leu Pro Glu Cys Arg Glu Ile Tyr Cys Pro  
180 185 190  
Ala Pro Pro Gln Ile Asp Asn Gly Ile Ile Gln Gly Glu Arg Asp His  
195 200 205  
Tyr Gly Tyr Arg Gln Ser Val Thr Tyr Ala Cys Asn Lys Gly Phe Thr  
210 215 220  
Met Ile Gly Glu His Ser Ile Tyr Cys Thr Val Asn Asn Asp Glu Gly  
225 230 235 240  
Glu Trp Ser Gly Pro Pro Pro Glu Cys Arg Gly Lys Ser Leu Thr Ser  
245 250 255  
Lys Val Pro Pro Thr Val Gln Lys Pro Thr Thr Val Asn Val Pro Thr  
260 265 270  
Thr Glu Val Ser Pro Thr Ser Gln Lys Thr Thr Thr Lys Thr Thr Thr  
275 280 285  
Pro Asn Ala Gln Ala Thr Arg Ser Thr Pro Val Ser Arg Thr Thr Lys  
290 295 300  
His Phe His Glu Thr Thr Pro Asn Lys Gly Ser Gly Thr Thr Ser Gly  
305 310 315 320  
Thr Thr Arg Leu Leu Ser Gly His Thr Cys Phe Thr Leu Thr Gly Leu  
325 330 335  
Leu Gly Thr Leu Val Thr Met Gly Leu Leu Thr  
340 345

<210> 5

<211> 17

<212> PRT

<213> *Mus musculus*

<400> 5  
Gly Ile Asn Pro Asn Asn Val Gly Ser Ile Tyr Asn Gln Lys Phe Arg  
1 5 10 15  
Gly

<210> 6

<211> 8

<212> PRT

<213> *Mus musculus*

<400> 6  
Gly Tyr Gly Asn Tyr Val Ala Tyr  
1 5

<210> 7

<211> 10

<212> PRT

<213> *Homo sapiens*

<400> 7  
Thr Leu Leu Ser Val Thr Arg Asn Asp Val  
1 5 10

<210> 8

<211> 9

<212> PRT

<213> *Homo sapiens*

<400> 8

Tyr Leu Ser Gly Ala Asn Leu Asn Leu  
1 5

<210> 9

<211> 117

<212> PRT

<213> Artificial Sequence

<220>

<223> modified heavy chain variable region of murine  
antibody

<400> 9

Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Thr Gly Lys Pro Gly Ala  
1 5 10 15  
Ser Gly Lys Met Ser Cys Lys Thr Ser Gly His Thr Ser Thr Glu His  
20 25 30

Asn Gly Gln Trp Ala Lys Gln Ser Pro Gly Gln Ser Leu Glu Trp Ile  
35 40 45  
Gly Gly Ile Asn Pro Asn Asn Val Gly Ser Ile Tyr Asn Gln Lys Phe  
50 55 60  
Arg Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser Thr Ala His  
65 70 75 80  
Met Glu Leu Arg Ser Pro Thr Ser Glu Asp Thr Ala Val Tyr Tyr Cys  
85 90 95  
Ala Arg Gly Tyr Gly Asn Tyr Val Ala Tyr Trp Gly Gln Gly Thr Leu  
100 105 110  
Val Thr Val Ser Ala  
115

<210> 10  
<211> 117  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> modified heavy chain variable region of murine  
antibody

<400> 10  
Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Thr Gly Lys Pro Gly Ala  
1 5 10 15  
Ser Gly Lys Met Ser Cys Lys Thr Ser Gly His Thr Ser Thr Glu His  
20 25 30  
Asn Gly Gln Trp Ala Lys Gln Ser Pro Gly Gln Ser Leu Glu Trp Asn  
35 40 45  
Gly Gly Arg Asn Asn Ser Ile Val Lys Ser Ile Thr Val Ser Ala Ser  
50 55 60  
Gly Thr Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser Thr Ala His  
65 70 75 80  
Met Glu Leu Arg Ser Pro Thr Ser Glu Asp Thr Ala Val Tyr Tyr Cys  
85 90 95  
Ser Pro Ser Tyr Thr Tyr Arg Pro Gly Trp Gly Gln Gly Thr Leu  
100 105 110  
Val Thr Val Ser Ala  
115

<210> 11  
<211> 117  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> modified heavy chain variable region of murine  
antibody

<400> 11  
Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Thr Gly Lys Phe Gly Ala

1	5	10	15
Thr Ile Ser Phe Ser Cys Asn Thr Gly Tyr Lys Leu Phe Gly Ser Thr			
20	25	30	
Ser Gly Gln Trp Ala Arg Gln Ser Pro Gly Gln Ser Leu Glu Trp Asn			
35	40	45	
Gly Gly Arg Asn Asn Ser Ile Val Lys Ser Ile Thr Val Ser Ala Ser			
50	55	60	
Gly Thr Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser Thr Ala His			
65	70	75	80
Met Glu Leu Arg Ser Pro Thr Ser Glu Asp Thr Ala Val Tyr Tyr Cys			
85	90	95	
Ser Pro Ser Tyr Thr Tyr Arg Pro Gly Trp Gly Gln Gly Thr Leu			
100	105	110	
Val Thr Val Ser Ala			
115			

<210> 12  
<211> 117  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> modified heavy chain variable region of murine  
antibody

<400> 12			
Glu Val Gln Leu Gln Gln Ser Gly Pro Thr Leu Val Lys Pro Thr Gln			
1	5	10	15
Thr Leu Thr Leu Thr Cys Thr Leu Ser Gly Phe Ser Phe Gly Ser Thr			
20	25	30	
Ser Met Asn Arg Leu Arg Gln Ser Pro Gly Gln Ser Leu Glu Trp Asn			
35	40	45	
Gly Gly Arg Asn Asn Ser Ile Val Lys Ser Ile Thr Val Ser Ala Ser			
50	55	60	
Gly Thr Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser Thr Ala His			
65	70	75	80
Met Glu Leu Arg Ser Pro Thr Ser Glu Asp Thr Ala Val Tyr Tyr Cys			
85	90	95	
Ser Pro Ser Tyr Thr Tyr Arg Pro Gly Trp Gly Gln Gly Thr Leu			
100	105	110	
Val Thr Val Ser Ala			
115			

<210> 13  
<211> 107  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> modified light chain variable region of murine  
antibody

<400> 13

Asp Ile Gln Thr Thr Gln Ser Gln Lys Ser Gln Ser Thr Ser Ala Gly  
1 5 10 15  
Asp Arg Ala Ser Thr Thr Cys Lys Ala Ser Gln Asn Val Ser Thr Asn  
20 25 30  
Ala Ala Trp Tyr Gln Gln Thr Pro Gly Gln Ser Pro Lys Ser Leu Ile  
35 40 45  
Tyr Ala Ala Ser Ser Leu Gln Ser Gly Val Pro Asp Arg Phe Thr Gly  
50 55 60  
Ser Gly Ser Gly Thr Asp Phe Thr Gln Thr Thr Ser Asn Ala Gln Ser  
65 70 75 80  
Glu Asp Ser Ala Glu Phe Phe Cys Gln Gln Tyr Asn Arg Tyr Pro His  
85 90 95  
Thr Phe Gly Gly Thr Lys Leu Glu Leu Lys  
100 105

<210> 14

<211> 107

<212> PRT

<213> Artificial Sequence

<220>

<223> modified light chain variable region of murine  
antibody

<400> 14

Asp Ile Gln Thr Thr Gln Ser Gln Lys Ser Gln Ser Thr Ser Ala Gly  
1 5 10 15  
Asp Arg Ala Ser Thr Thr Cys Thr Leu Leu Ser Val Thr Arg Asn Asp  
20 25 30  
Val Ala Trp Tyr Gln Gln Thr Pro Gly Gln Ser Pro Lys Ser Leu Ile  
35 40 45  
Tyr Ala Ala Ser Ser Leu Gln Ser Gly Val Pro Asp Arg Phe Thr Gly  
50 55 60  
Ser Gly Ser Gly Thr Asp Phe Thr Gln Thr Thr Ser Asn Ala Gln Ser  
65 70 75 80  
Glu Asp Ser Ala Glu Phe Phe Cys Tyr Leu Ser Gly Ala Asn Leu Asn  
85 90 95  
Leu Phe Gly Gly Thr Lys Leu Glu Leu Lys  
100 105

<210> 15

<211> 17

<212> PRT

<213> Homo sapiens

<400> 15

Asn Ile Thr Val Asn Asn Ser Gly Ser Tyr Thr Cys Gln Ala His Asn  
1 5 10 15  
Ser

<210> 16  
<211> 17  
<212> PRT  
<213> Homo sapiens

<400> 16  
Asn Ile Thr Val Asn Asn Ser Gly Ser Tyr Met Cys Gln Ala His Asn  
1 5 10 15  
Ser

<210> 17  
<211> 17  
<212> PRT  
<213> Homo sapiens

<400> 17  
Lys Ile Thr Pro Asn Asn Asn Gly Thr Tyr Ala Cys Phe Val Ser Asn  
1 5 10 15  
Leu

<210> 18  
<211> 17  
<212> PRT  
<213> Homo sapiens

<400> 18  
Gly Arg Asn Asn Ser Ile Val Lys Ser Ile Thr Val Ser Ala Ser Gly  
1 5 10 15  
Thr

<210> 19  
<211> 8  
<212> PRT  
<213> Hom sapiens

<400> 19  
Gly Tyr Ser Trp Tyr Lys Gly Glu  
1 5

<210> 20  
<211> 8  
<212> PRT  
<213> Homo sapiens

<400> 20  
Ser Tyr Thr Tyr Tyr Arg Pro Gly  
1 5

<210> 21  
<211> 8  
<212> PRT  
<213> Homo sapiens

<400> 21  
Ser Lys Ala Asn Tyr Arg Pro Gly  
1 5

<210> 22  
<211> 8  
<212> PRT  
<213> Hom sapiens

<400> 22  
Glu Asp Lys Asp Ala Val Ala Phe  
1 5

<210> 23  
<211> 9  
<212> PRT  
<213> Mus musculus

<400> 23  
Asn Val Gly Ser Ile Tyr Asn Gln Lys  
1 5

<210> 24  
<211> 9  
<212> PRT  
<213> Homo sapines

<400> 24  
Ile Val Lys Ser Ile Thr Val Ser Ala  
1 5

<210> 25  
<211> 9  
<212> PRT  
<213> Mus musculus

<400> 25  
Ile Asn Pro Asn Asn Val Gly Ser Ile

1 5

<210> 26  
<211> 10  
<212> PRT  
<213> *Homo sapiens*

<400> 26  
Ser Ile Val Lys Ser Ile Thr Val Ser Ala  
1 5 10

<210> 27  
<211> 9  
<212> PRT  
<213> *Mus musculus*

<400> 27  
Val Gly Ser Ile Tyr Asn Gln Lys Phe  
1 5

<210> 28  
<211> 9  
<212> PRT  
<213> *Homo sapiens*

<400> 28  
Ser Ile Val Lys Ser Ile Thr Val Ser  
1 5

<210> 29  
<211> 8  
<212> PRT  
<213> *Homo sapiens*

<400> 29  
Leu Ala Thr Arg Asn Asn Ser Ile  
1 5

<210> 30  
<211> 6  
<212> PRT  
<213> *Mus musculus*

<400> 30  
Val Gly Ser Ile Tyr Asn  
1 5

<210> 31  
<211> 7  
<212> PRT  
<213> Homo sapiens

<400> 31  
Ile Val Lys Ser Ile Thr Val  
1 5

<210> 32  
<211> 9  
<212> PRT  
<213> Mus musculus

<400> 32  
Cys Ala Arg Gly Tyr Gly Asn Tyr Val  
1 5

<210> 33  
<211> 9  
<212> PRT  
<213> Homo sapiens

<400> 33  
His Leu Phe Gly Tyr Ser Trp Tyr Lys  
1 5

<210> 34  
<211> 9  
<212> PRT  
<213> Homo sapiens

<400> 34  
Asn Arg Phe Gly Tyr Ser Trp Tyr Lys  
1 5